

**The Market for Crushed  
Stone in the GTA West and  
Economic Benefits of the  
Proposed Nelson Burlington  
Quarry Extension**

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# **The Market for Crushed Stone in the GTA West and Economic Benefits of the Proposed Nelson Burlington Quarry Extension**

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## EXECUTIVE SUMMARY

Altus Group Economic Consulting (formerly Clayton Research) was commissioned by Nelson Aggregate Co. to prepare this report related to its Burlington Quarry extension.

The quarry extension will provide additional licensed reserves of crushed stone for the GTA West market, which will help to fill some of the anticipated supply shortages that are expected to emerge over the next 20 years.

Moreover, the quarry extension will ensure that the quarry operation continues to generate revenues for the City of Burlington and Halton Region, as well as local employment opportunities and spin-off spending to other local businesses, as summarized below.

<b>Employment</b>	<p><b>26</b> person-years of employment during the site preparation stage</p> <p><b>48</b> permanent full-time jobs at the quarry</p> <p>More than <b>500</b> additional outside workers who provide contracted services to the quarry operation</p>
<b>City of Burlington Revenues</b>	<p>Property taxes: about <b>\$78,000</b> in total municipal property taxes per year (in 2008 dollars), or about <b>\$1.2 million</b> over the 15 year extended life of the quarry</p> <p>Aggregate license fee: <b>\$108,000</b> per year or about <b>\$1.6 million</b> over the 15 year extended life of the quarry</p>
<b>Halton Region Revenues</b>	<p>Property taxes: about <b>\$95,000</b> in Regional property taxes per year, or about <b>\$1.4 million</b> over the extended quarry life</p> <p>Aggregate license fee: <b>\$27,000</b> per year or about <b>\$405,000</b> over the extended life of the quarry</p>

<p><b>Indirect Financial Benefits for City of Burlington, Region of Halton and Local Residents</b></p>	<p>Close by aggregate supply for own building programs</p> <p>Voluntary contributions made by the quarry (e.g. community events sponsorships, fundraising campaigns, etc.) of approximately \$75,000 per year</p>
<p><b>Boards of Education</b></p>	<p>About <b>\$136,000</b> per year will be generated in education taxes (or about <b>\$2 million</b> over the extended life of the quarry), without any additional financial burden on local Boards of Education</p>
<p><b>Spin-offs to Local Businesses</b></p>	<p>A portion of the estimated <b>\$3.6 million</b> in annual wages earned by quarry employees, as well as the estimated <b>\$1.3 million</b> earned by workers during the site preparation stage and the incomes earned by the over 500 other workers providing contracted services on a regular basis to the quarry, will be spent locally</p> <p>A portion of the estimated <b>\$7.8 million</b> spent annually by the quarry on operating supplies and services will be done locally</p> <p>A portion of the estimated <b>\$3.2 million</b> spent annually by the quarry on trucking services will be done locally</p> <p>Over the 15 year extended life of the quarry, spending on operational supplies and services is expected to total an estimated <b>\$165 million</b></p>

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# 1 INTRODUCTION

Altus Group Economic Consulting (formerly Clayton Research) was commissioned by Nelson Aggregate Co. to prepare this report related to its Burlington Quarry extension. The quarry extension would allow Nelson Aggregate to extend the life of its current quarry operations.

In addition to this introduction, this report contains the following major sections:

- **Section 2: The Market for Crushed Stone in the GTA West** outlines a scenario of what could reasonably be expected to occur in terms of the demand and supply aspects of the market for crushed stone over the next 20 years in the western portion of the Greater Toronto Area (referred to hereafter as the “GTA West”).<sup>1</sup> The analysis concludes that additional sources of supply are needed to address the expected demand levels, such as would be provided by additional licensed supply from the Nelson Burlington Quarry extension.
- **Section 3: Economic Benefits of the Proposed Nelson Burlington Quarry Extension** then examines the economic benefits associated with the proposed quarry extension. The analysis shows that the quarry extension will ensure the continuation of direct and indirect economic benefits for local governments, local businesses and local residents in terms of the following:
  - employment, both during the site preparation stage and on-going quarry jobs;
  - financial contribution to the City of Burlington’s revenues through property taxes and aggregate license fees;
  - financial contribution to Halton Region’s revenues through property taxes and aggregate license fees;

<sup>1</sup> The GTA West is comprised of the Regional Municipalities of Halton and Peel, and the areas of the City of Toronto and the Regional Municipality of York that are west of Yonge Street. Crushed stone is used in this report in reference to aggregate derived from bedrock quarries.

- indirect financial benefits to the City of Burlington and Halton Region due to the availability of close by aggregate supply for their own building programs, and to the local residents in the form of donations supporting the local communities;
- indirect benefits for local Boards of Education; and
- spin-off benefits to local businesses.

Note that all dollar figures in this report are expressed in constant 2008 dollars.

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## **2 THE MARKET FOR CRUSHED STONE IN THE GTA WEST**

“Construction aggregate” is the term used to collectively describe crushed stone, sand and gravel. Crushed stone is produced at limestone and dolostone quarries by drilling and blasting bedrock formations.

This section looks at the expected demand and supply situation for crushed stone in the GTA West over the next 20 years.

### **2.1 THE DEMAND FOR CRUSHED STONE IN THE GTA WEST**

This section reviews the demand for crushed stone in the GTA West since the mid 1980s and expected average annual demand levels over the next 20 years.

#### **2.1.1 A Note on Demand versus Production**

For the purposes of this study, the “demand” for crushed stone in the GTA West refers to the amount actually consumed within the GTA West. This is not the same as the amount of crushed stone physically produced within the GTA West. This is because the GTA West is currently not self-sufficient in terms of crushed stone. Rather, it is a net importer of crushed stone from surrounding areas.

#### **2.1.2 GTA West Has Consumed About 14 Million Tonnes of Crushed Stone on Average Each Year over the Past 22 Years**

Estimates of the demand for crushed stone for the GTA West are provided on Figure 2-1. On an average annual basis, about 14 million tonnes of crushed stone have been consumed per year in the past 22 years, ranging from a low of about 10 million tonnes per year in the economic downturn of the 1991-1995 period to a high of about 16 million tonnes per year in the 1986-1990 period.

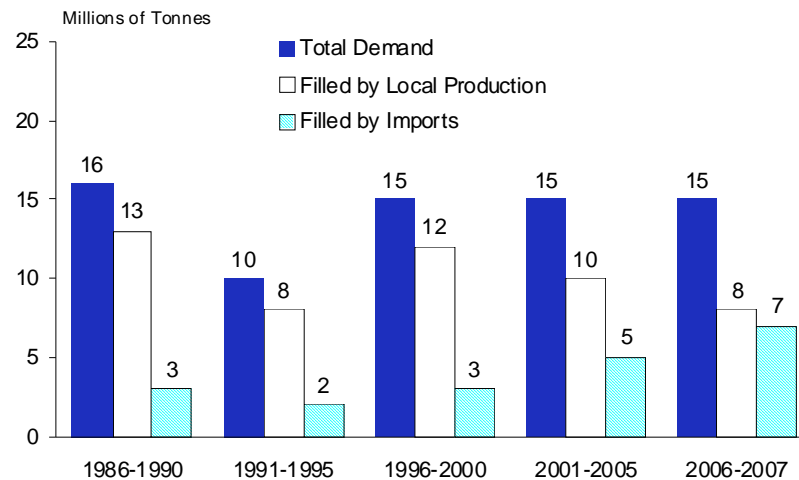
#### **2.1.3 The GTA West Has Become Increasingly Reliant on “Imports” to Fill Its Crushed Stone Needs**

A growing and significant proportion of the crushed stone being consumed in the GTA West is being imported (i.e. originating from quarries located outside of the GTA West).

Estimates prepared by Altus Group Economic Consulting indicate that the proportion of the demand for crushed stone in the GTA West filled by imports has risen from less than 20% in the latter 1980s to almost 50% in the past 2 years (Figure 2-1).

Figure 2-1

### Average Annual Demand for Crushed Stone, GTA West



Source: Estimates by Altus Group Economic Consulting based on data from Ministry of Natural Resources, TOARC and Aggregates & Roadbuilding Magazine

#### 2.1.4 Long-term Historical Average Used for Demand/Supply Analysis

The long term historical annual average demand for crushed stone in the GTA West over the 1986-2007 period was about 14 million tonnes per year. As this 22 year period contains periods of both economic upturns and downturns, this average demand level provides a reasonable basis for analyzing the future long-term demand/supply relationship.

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## 2.2 THE SUPPLY OF CRUSHED STONE IN THE GTA WEST

This section looks at the currently available sources of supply of crushed stone within the GTA West and supply constraints.

### 2.2.1 A Note on Supply Definitions

When referring to the supply of aggregate in this report, a distinction is made between the amount of “resource” and the amount of “licensed reserves”:

- **Resource** refers to the total amount of aggregate that potentially could be extracted. It includes lands that have not been approved for extraction and do not have an aggregate license, as well as those that have been approved and licensed. Constraints (such as geographic variability, land availability, etc.) reduce the amount of resource that could potentially be considered for extraction.
- **Licensed reserves** is a subgroup of “resource” that only includes those resources in areas that have been approved for extraction for which an aggregate license has been obtained and therefore extraction can currently take place.

This distinction is an important one to make in terms of determining remaining years of supply of crushed stone, particularly in the short to medium term. That is because the lead time to get a new site into production (i.e. from initial selection of site through to obtaining an aggregate license and then to first shipment) in the GTA is a minimum of roughly 6 years, assuming there is not an Ontario Municipal Board (OMB) hearing; an OMB hearing can add another 1.5 to 2 years.<sup>2</sup>

As such, licensed reserves represent a better measure of short to medium term potential supply of crushed stone than does estimated resource tonnage.

<sup>2</sup> Planning Initiatives, State of the Resource Study, 1992

## 2.2.2 Remaining Licensed Reserves of Crushed Stone in the GTA West Will Not Be Sufficient to Meet Demand over the Next 20 Years

Estimates prepared by Beck in 2002<sup>3</sup> showed remaining licensed reserves of dolostone among the four quarries operating in the GTA West of about 107 million tonnes as of the end of 2002. These reserves include both Amabel dolostone and Reynales (according to Beck, the Amabel is high quality and the quality of the Reynales will likely be limited).

Since that time, the following has occurred:

- During the 2003-2007 period, about 44 million tonnes of crushed stone were extracted from the GTA West quarries; and
- During this same time period, an application by Dufferin Aggregates to extend its Milton Quarry was approved, adding about 65 million tonnes to licensed reserves.

The remaining licensed reserves at the end of 2007 therefore are estimated at about 128 million tonnes (the 107 million tonnes remaining at the end of 2002 less production of 44 million tonnes during 2003-2007, plus new licensed reserves of 65 million tonnes).

How quickly these reserves will be depleted will depend on how much the assumed average annual demand level of 14 million tonnes is filled by local production versus imports:

- Assuming no imports, current licensed reserves would be depleted in about 9 years. This scenario would require individual quarries with remaining licensed reserves be operationally able and willing to step up production from their recent combined level of about 8 million tonnes per year (based on the past 2 years) to about 14 million tonnes per year (and that remaining producers fill the gap as some sites become depleted). This appears unlikely given in recent years the GTA West suppliers appear to have done the opposite, i.e. cut back on production in order to stretch out the remaining years of life of their reserves and therefore keep their operations going for a longer period.

<sup>3</sup> John Beck, Witness Statement, Town of Caledon OPA 161, December 2002.

- Assuming local production at the average annual level of the past 22 years (i.e. about 10.5 million tonnes per year) and 3.5 million per year of demand filled by imports, existing licensed reserves would be depleted in about 12 years time.
- Assuming local production remains near the estimated situation in the past 2 years (i.e. about 8 million tonnes a year) and 6 million tonnes a year of demand is filled by imports, remaining licensed reserves would represent about 16 years of supply. However this scenario means continued relatively high levels of imports.

Looking at a 20 year timeframe, in all 3 scenarios the existing licensed reserves of crushed stone in the GTA West would fall short of the 20 year need (of 280 million tonnes), with the shortfalls ranging from 32 million tonnes to 152 million tonnes, depending on the extent to which imports vs. local production plays a role.

Moreover, it is not sufficient for licensed reserves simply to match the expected level of demand over the next 20 years (and as shown, in fact, reserves today fall short of expected demand over the next 20 years). To deal with unforeseen circumstances (such as higher than expected demand, fluctuating market conditions, uncertainties/changes in the planning process, production delays/stoppages among one or more producers, etc.), reserves well in excess of expected levels of total demand need to be available. This will help to avoid shortages - and potentially escalating prices.

## 2.3 CONCLUSION

Given the long planning timeframes discussed previously to get new sites into production and potential for higher than expected demand levels and/or potential disruptions to supply, including additional production cuts by current quarry operators in order to extend their operating years, the local supply situation in the GTA West with respect to crushed stone can already be characterized as critical.

Supply constraints could also result in additional upward pressure on the price of crushed stone in the GTA West. If so, this would have flow-through implications for the cost of construction work, and a negative financial impact on the residents and governments in the GTA West, including Halton Region.

### **3 ECONOMIC BENEFITS OF THE PROPOSED NELSON BURLINGTON QUARRY EXTENSION**

This section examines the economic benefits associated with the proposed extension to the Nelson Burlington Quarry.

The quarry extension site encompasses approximately 200 acres, with a proposed excavation area of about 127.5 acres. When the quarry is fully operating, it is expected to have 48 on-site employees, with annual stone production of about 1.8 million tonnes per year. The extension is expected to prolong the life of the existing quarry by about 15 years.

The proposed quarry extension will ensure that the quarry continues to have substantial direct and indirect economic benefits for local governments, local businesses and local residents in terms of the following:

- Employment, both during construction and permanent jobs created once the extension is operational;
- Contribution to the City of Burlington's revenues through property taxes and aggregate license fees;
- Contribution to Halton Region's revenues through property taxes and aggregate license fees;
- Indirect financial benefits to the City of Burlington and Halton Region and local residents;
- Indirect benefits for local Boards of Education; and
- Spin-off benefits to local businesses.

#### **3.1 EMPLOYMENT IMPACTS**

There are two aspects to the employment benefits: temporary jobs created during the site preparation stage and on-going employment once the extension is operational.

##### **3.1.1 Employment Generated During Site Preparation**

The site preparation will generate work both directly and indirectly. Directly, jobs are created in the engineering construction industry; indirectly, work is generated in the industries that support the engineering construction

industry with materials, equipment and other inputs that the site preparation requires.

For every \$1 million spent on engineering construction, it is estimated that about 7.5 direct person-years of employment and 4.0 indirect person-years of employment are generated. The estimated \$2.25 million that Nelson Aggregate Co. expects to spend on the site preparation therefore would generate about 26 person-years of employment: 17 person-years in on-site work, and 9 in the supporting businesses. Most of the jobs are expected to be filled by Halton Region residents.

Figure 3-1

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**Estimated Employment Generated from Site Preparation,  
Proposed Nelson Burlington Quarry Extension**

Estimated Site Preparation Costs	Person-Years of Employment Generated				
	Per \$Million		Total Employment		
	Direct	Indirect	Direct	Indirect	Total
\$2,250,000	7.50	4.00	17	9	26

Source: Estimates by Altus Group Economic Consulting

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### 3.1.2 On-Going Employment

The quarry extension will also provide on-going employment benefits. Based on employment for the existing quarry, it is expected that there will be about 48 full-time positions at the quarry once it is fully operational. It is expected that the majority of these jobs will be filled by residents of Halton Region.

In addition, more than 500 additional jobs are expected to be generated for outside workers who provide contracted services to the quarry operation (including truck drivers, crane operators, electricians, plumbers, welders, contract crushers).

## 3.2 CITY OF BURLINGTON REVENUES

The proposed Nelson Burlington Quarry extension will directly generate revenues for the City of Burlington in two main areas: property taxes and aggregate license fees.

### 3.2.1 Municipal Property Taxes

Local property taxes generated once the quarry extension is operational will be a function of the assessed value applied to the site and the applicable property tax rates.

Both the existing site and the extension site will be used for the quarry operations, so the combined assessments for both properties are relevant for the analysis here.

It is not possible to determine with certainty what exactly the assessed value for the site will be, as it is ultimately the Municipal Property Assessment Corporation (MPAC) that will make that determination. However, assuming comparable per acre industrial assessment for the extension as the existing site, the assessed value of the quarry operation including the extension is as per Figure 3-2.

Figure 3-2

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#### Estimated Assessed Value for the Proposed Burlington Quarry Extension\*

	Total Value
Assessed residential	\$8,300,000
Assessed commercial	\$600,000
Assessed industrial	\$5,500,000
<b>Total</b>	<b>\$14,400,000</b>

\* Includes the existing quarry site, which would also continue to be part of the operation

Source: Estimates by Altus Group Economic Consulting

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In the City of Burlington, the municipal property tax rate for industrial properties for 2008 is 0.821009% and for the residential class 0.357225%.

Based on the assumed assessment values and these tax rates, the annual municipal property tax revenues from the quarry including the extension in 2008 dollars are estimated at approximately \$78,000 per year, or about \$1.2 million over the extended life of the quarry.

Figure 3-3

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**Estimated Annual Municipal Property Tax Revenues  
from the Proposed Nelson Burlington Quarry Extension**

	<b>Assessment</b> \$	<b>2008 Municipal Tax Rate</b> %	<b>Municipal Tax Revenue</b> \$
Residential	\$8,300,000	0.357225%	\$29,650
Commercial	\$600,000	0.520298%	\$3,122
Industrial	\$5,500,000	0.821009%	\$45,155
Total	\$14,400,000		\$77,927

Source: Estimates by Altus Group Economic Consulting

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### 3.2.2 Aggregate License Fee

From 1990 up until the end of 2006, a 6.0 cents per tonne license fee had applied to aggregate production in Ontario under the Aggregate Resources Act. Effective January 1, 2007, this fee was increased to 11.5 cents per tonne. The fee is divided as follows:

- 6.0 cents to the lower tier municipality
- 1.5 cents to the upper tier municipality
- 3.5 cent to the Province
- 0.5 cents to the Abandoned Pits and Quarries Fund (for rehabilitation purposes)

The proposed Nelson quarry extension is expected to produce about 1.8 million tonnes of aggregate per year. This translates into annual revenue for the City of Burlington of about \$108,000 or about \$1.6 million over the expected extended life of the quarry.

Figure 3-4

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**Estimated Annual Aggregate License Fees Generated from the  
Proposed Nelson Burlington Quarry Extension**

<b>Estimated Annual Production</b> <i>tonnes</i>	<b>Aggregate License Fee Rate</b>		<b>Total Aggregate License Fees Revenue, City of Burlington</b>
	<b>Total</b> <i>per tonne</i>	<b>To City</b>	
1,800,000	\$0.115	\$0.060	\$108,000

Source: Altus Group Economic Consulting

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### 3.3 HALTON REGION REVENUES

The proposed Nelson Burlington Quarry extension will directly generate revenues for Halton Region in two main areas: property taxes and aggregate license fees.

#### 3.3.1 Region Property Taxes

The applicable Region tax rate for industrial properties for 2008 is 1.017950%, for commercial class 0.614684% and for the residential class 0.422028%.

Based on the assumed assessment values and these tax rates, the estimated annual Region property tax revenues from the quarry including the extension are estimated at approximately \$95,000 per year in 2008 dollars, or about \$1.4 million over the extended life of the quarry.

Figure 3-5

#### Estimated Annual Regional Property Tax Revenues from the Proposed Nelson Burlington Quarry Extension

	Assessment \$	2008 Regional Tax Rate %	Regional Tax Revenue \$
Residential	\$8,300,000	0.422028%	\$35,028
Commercial	\$600,000	0.614684%	\$3,688
Industrial	\$5,500,000	1.017950%	\$55,987
Total	\$14,400,000		\$94,704

Source: Estimates by Altus Group Economic Consulting

#### 3.3.2 Aggregate License Fee

As discussed earlier, 1.5 cents of the total 11.5 cents per tonne of aggregate produced license fee goes to the upper tier municipality (in this case the Regional Municipality of Halton). When fully operational, the proposed Nelson quarry extension is expected to produce about 1.8 million tonnes of aggregate per year. This translates into annual revenue for Halton Region of about \$27,000 or about \$405,000 over the expected extended life of the quarry.

Figure 3-6

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**Estimated Annual Aggregate License Fees Generated from the Proposed Nelson Burlington Quarry Extension**

Estimated Annual Production <i>tonnes</i>	Aggregate License Fee Rate		Total Aggregate License Fees Revenue, Region of Halton
	Total <i>per tonne</i>	To Region	
1,800,000	\$0.115	\$0.015	\$27,000

Source: Altus Group Economic Consulting

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### 3.4 INDIRECT FINANCIAL BENEFITS FOR THE CITY OF BURLINGTON, HALTON REGION AND LOCAL RESIDENTS

There are several other benefits that would accrue to the City of Burlington, Halton Region and the local residents as discussed below.

#### 3.4.1 Close Supply of Aggregate for Own Building Programs

The stone available from the proposed Nelson Burlington Quarry extension will provide close to market supply for the City and Region's own building programs. As transportation costs can comprise a significant proportion of the delivered cost of aggregate, close by supply provides a cost advantage.

#### 3.4.2 Voluntary Contributions

The aggregate industry in Ontario contributes back to the local communities through various forms of donations, sponsorships, etc. In conjunction with its existing quarry operation, Nelson Aggregates is active in this respect, contributing roughly \$75,000 per year, and is expected to continue to do so in association with the quarry extension.

### 3.5 BOARDS OF EDUCATION

In addition to City of Burlington and Halton Region property taxes outlined earlier, there is another layer of property taxation - the education property tax component. These taxes are generated to the provincial government, who then allocate funds throughout the province (not necessarily in proportion to the amounts paid within each municipality). While not direct revenues for the local boards of education, ultimately they share in the availability of these funds.

The same assessment base is used as for the municipal property taxes but the tax rates differ, as shown below.

Figure 3-7

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**Estimated Annual Education Property Tax Revenues from the Proposed Nelson Burlington Quarry Extension**

	<b>Assessment</b> \$	<b>2008 Education Tax Rate</b> %	<b>Education Tax Revenue</b> \$
Residential	\$8,300,000	0.26400%	\$21,912
Commercial	\$600,000	1.37466%	\$8,248
Industrial	\$5,500,000	1.92303%	\$105,767
<b>Total</b>	<b>\$14,400,000</b>		<b>\$135,926</b>

Source: Estimates by Altus Group Economic Consulting

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Almost \$136,000 in education property taxes is expected to be generated each year by the quarry including the extension, or about \$2 million in 2008 dollars over the extended life of the quarry.

### 3.6 SPIN-OFF BENEFITS TO LOCAL BUSINESSES

Local businesses will benefit from sales associated with spending done by quarry extension employees and the quarry extension itself as part of its normal operation.

#### 3.6.1 Spending by Workers on Local Goods and Services

The wages paid to the 48 full-time employees at the quarry are estimated to be about \$3.6 million annually, based on current wages at the existing Burlington Quarry site.

In addition, about \$1.3 million in wages will be earned by the workers employed during the site preparation stage; there will also be additional wages earned by the over 500 other workers providing contracted services on a regular basis to the quarry.

These wages will generate spending on goods and services. As the majority of these workers are expected to be local residents, they can be expected to do a large portion of their spending on these goods and services within the City of Burlington and Halton Region.

### 3.6.2 Spending Related to Quarry Operations on Local Goods and Services

Nelson Aggregate Co. currently spends about \$7.8 million on goods and services to support the existing Burlington Quarry operation. Another \$3.2 million is spent on trucking services. A comparable amount of spending is expected to occur for the quarry extension.

Over the 15 year extended life of the quarry, spending on operational supplies and services by Nelson Aggregate Co. is expected to total an estimated \$165 million. It is expected that a large portion of this spending will be done locally within the City of Burlington and the broader Halton Region.

## 3.7 CONCLUSION

The total revenues generated by the proposed Nelson Burlington Quarry extension over the additional 15 year life of the quarry are expected to be substantial:

- City of Burlington – approximately \$2.8 million (in 2008 dollars)
- Halton Region – approximately \$1.8 million (in 2008 dollars)

The quarry extension will also ensure continued employment opportunities, many of which are filled by residents of Halton Region.

In addition, there are other indirect benefits that would continue to accrue to the City of Burlington and Halton Region, as well as the local residents, including:

- The price advantage of close by supply of aggregate for governments' own building programs;
- Voluntary donations and sponsorships to the local communities by Nelson Aggregate Co.
- Generation of education taxes, which indirectly benefit local school boards without any additional burden on the school systems; and
- Spin-off impacts to local businesses through the wages spent by the quarry workers, and spending related to the quarry operations.